Prior Art FX Settlement Process		
Trade Date	Settlement Date	Reconciliation Date
• Parties transact a series of transactions in various currency pairs • Parties send confirmations of each trade MT300 • Parties match MT300s to create a confirmed trade • Parties instruct payment of sold currency leg for each trade • Parties pre-advice receipt of bought currency leg for each trade	• Branch or nostro constructs payment queue • Branch or nostro releases payments as liquidity in local payment system allows • Branch or nostro sends MT900 to confirm payments • Branch or nostro sends MT910 to confirm receipts • Branch or nostro sends MT950 daily statement of account activity	• MT950s from all branches and nostros reconciled to match payment and counterpayment (receipt) settlement of transactions • Exception report of failed settlements generated • Failed settlements queried with counterparties • Decisions on default/ payment suspension taken after investigation • Payments at branches and nostros cancelled on a "best efforts" basis

FIG. 1

Risk
Payment Risk = The risk of loss should an expected payment not be received in a timely manner
Cross-Border Settlement Risk = The Payment Risk arising in settlement of foreign exchange trades where payment must be made in one currency in expectation of counterpayment being received in another currency
Liquidity Risk = The direct and contingent costs or penalty associated with unanticipated receipt shortfalls
Systematic Risk = Risk associated with the general health or structure of the financial system as a result of inability to cope with a financial default or liquidity shock

FIG. 2

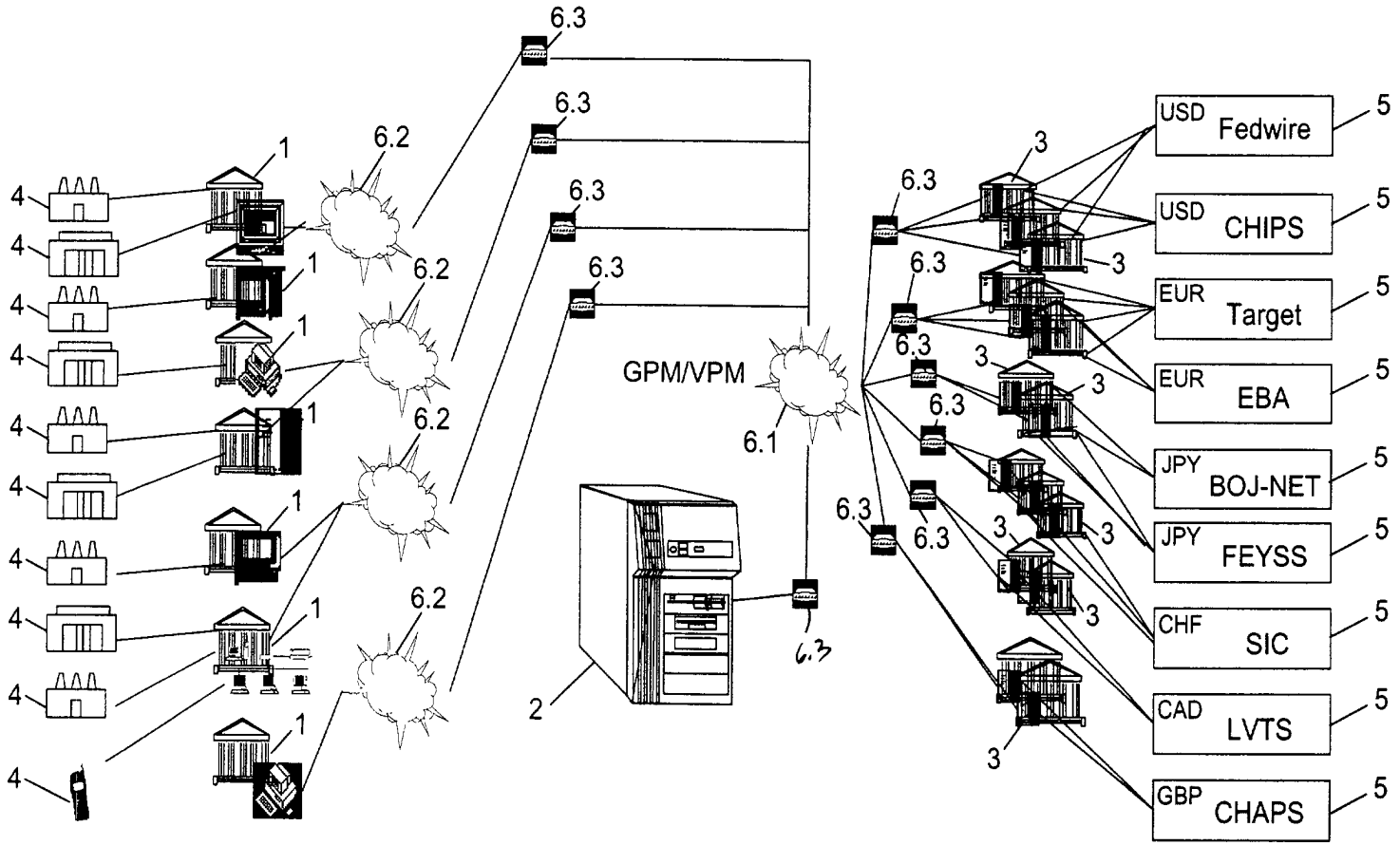
6.3
6.3
6.3
6.3
6.2
6.2
6.2
6.2
1
1
1
1
1
1
1
4
4
4
4
4
4
4
4
4
GPM/VPM
6.1
2
6.3
3
6.3
6.3
6.3
6.3
6.3
6.3
3
3
3
3
3
3
USD Fedwire
USD CHIPS
EUR Target
EUR EBA
JPY BOJ-NET
JPY FEYSS
CHF SIC
CAD LVTS
GBP CHAPS
5
5
5
5
5
5
5
5
5

FIG. 3

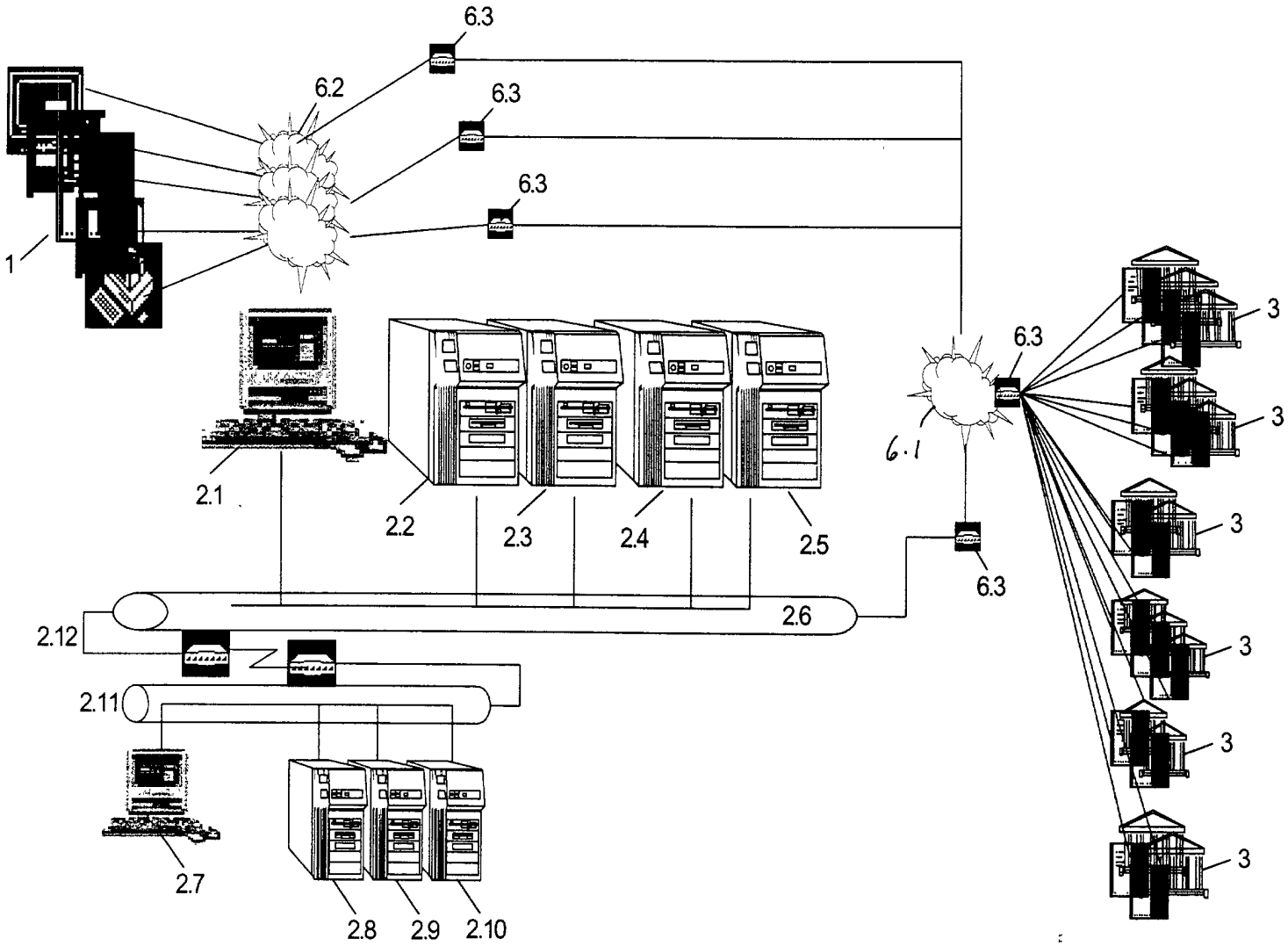

FIG. 4

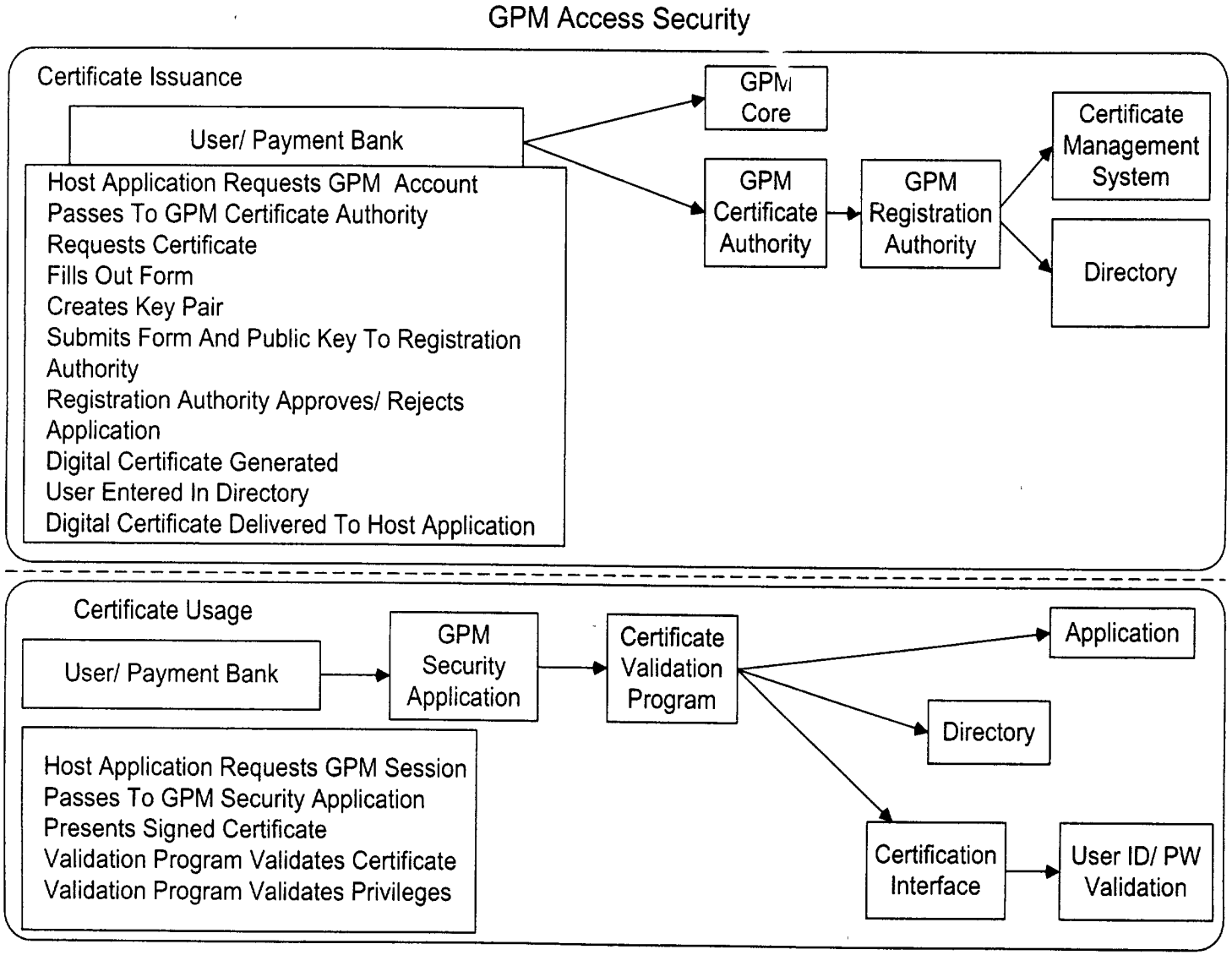
GPM Access Security
Certificate Issuance
User/ Payment Bank
Host Application Requests GPM Account
Passes To GPM Certificate Authority
Requests Certificate
Fills Out Form
Creates Key Pair
Submits Form And Public Key To Registration Authority
Registration Authority Approves/ Rejects Application
Digital Certificate Generated
User Entered In Directory
Digital Certificate Delivered To Host Application
GPM Core
GPM Certificate Authority
GPM Registration Authority
Certificate Management System
Directory
Certificate Usage
User/ Payment Bank
GPM Security Application
Certificate Validation Program
Application
Directory
Certification Interface
User ID/ PW Validation
Host Application Requests GPM Session
Passes To GPM Security Application
Presents Signed Certificate
Validation Program Validates Certificate
Validation Program Validates Privileges

FIG. 5

GPM FX Settlement Process		
Trade Date	Settlement Date	Reconciliation Date
• Parties transact a series of transactions in various currency pairs • Parties send confirmations of each trade MT300 • Parties match MT300s to create a confirmed trade • Parties instruct payment of sold currency leg for each trade to Payment Bank • Parties pre-advice receipt of bought currency leg for each trade • Parties advise GPM Payment Banks of Risk Parameters	• Payment Bank constructs payment queue • Payment Bank Host Application releases payments through GPM Filter Process • Payment Bank sends MT900 to confirm payments and MT910 to confirm receipts • Payment Bank Host App. notifies sustained imbalance as observed • Exception queries, Suspend Process and liquidity management decisions taken intraday • Payment Bank sends MT950 daily statement of account activity	• MT950s from all branches and nostros reconciled to determine settlement of transactions • Follow-up on individual failed settlements / defaults

FIG. 6

GPM Flow Diagram

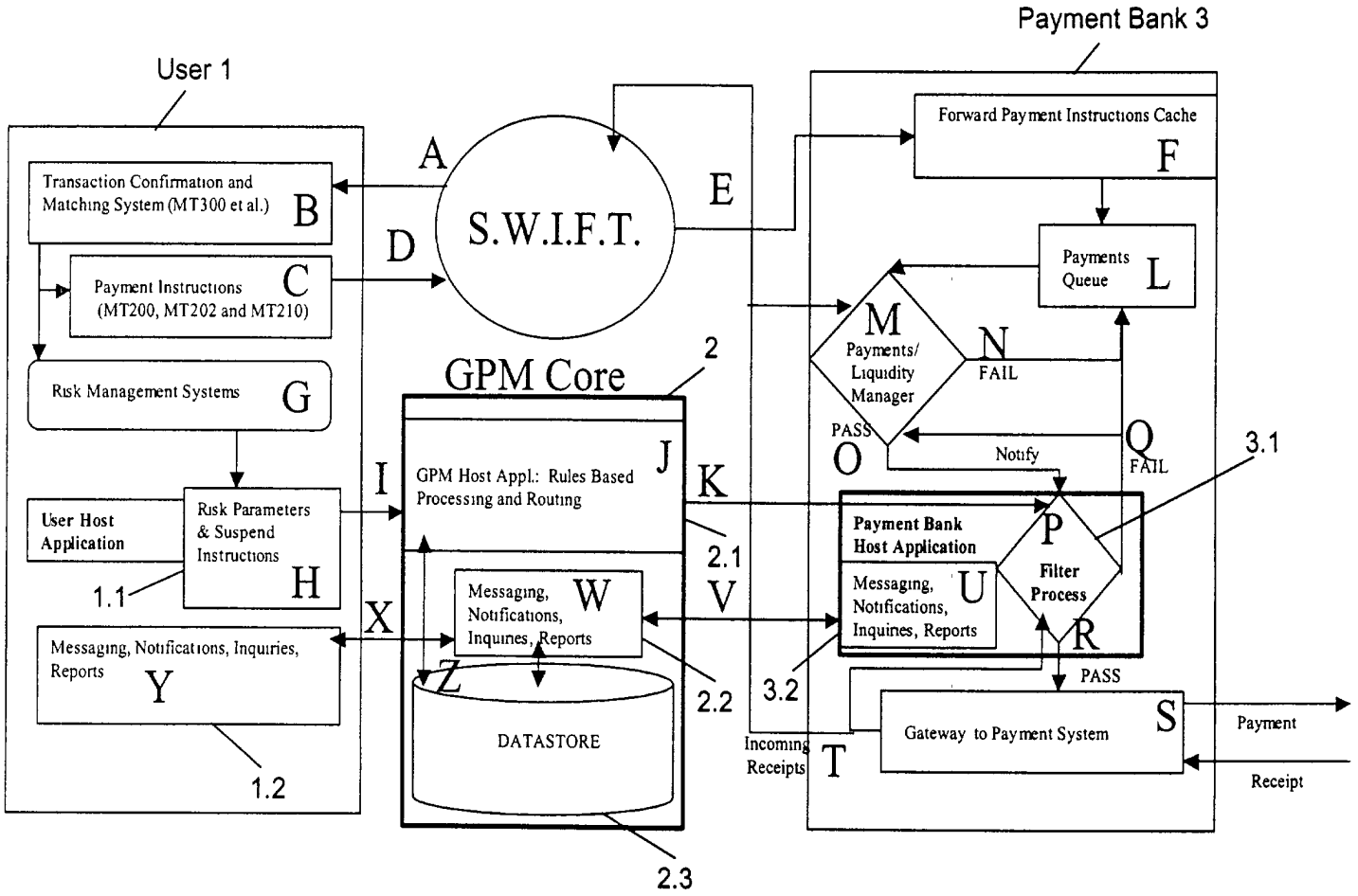

FIG. 7

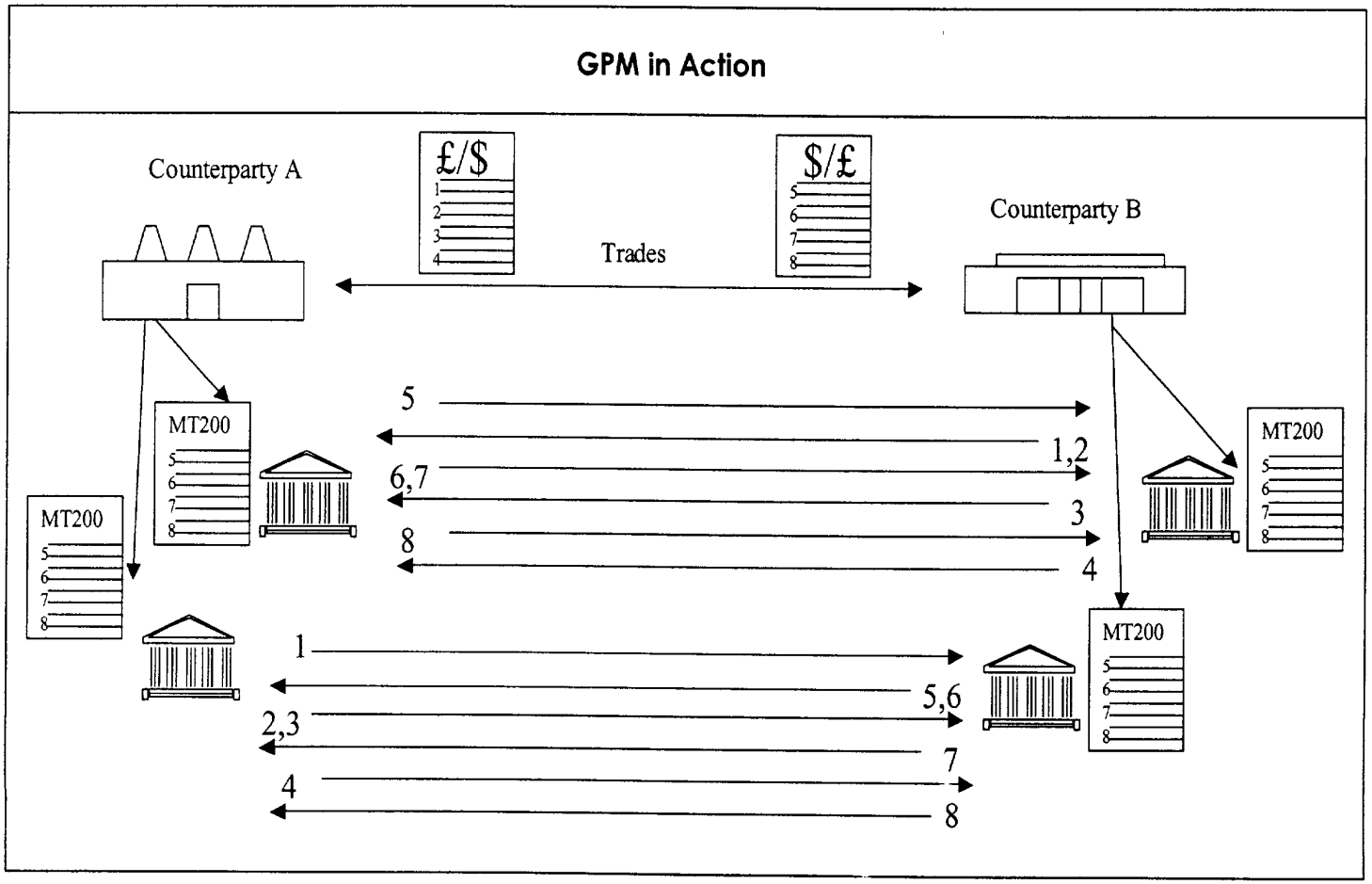
GPM in Action
Counterparty A
£/$
$/£
Trades
Counterparty B
MT200
MT200
MT200
MT200
5
1,2
6,7
3
8
4
1
5,6
2,3
7
4
8

FIG. 8

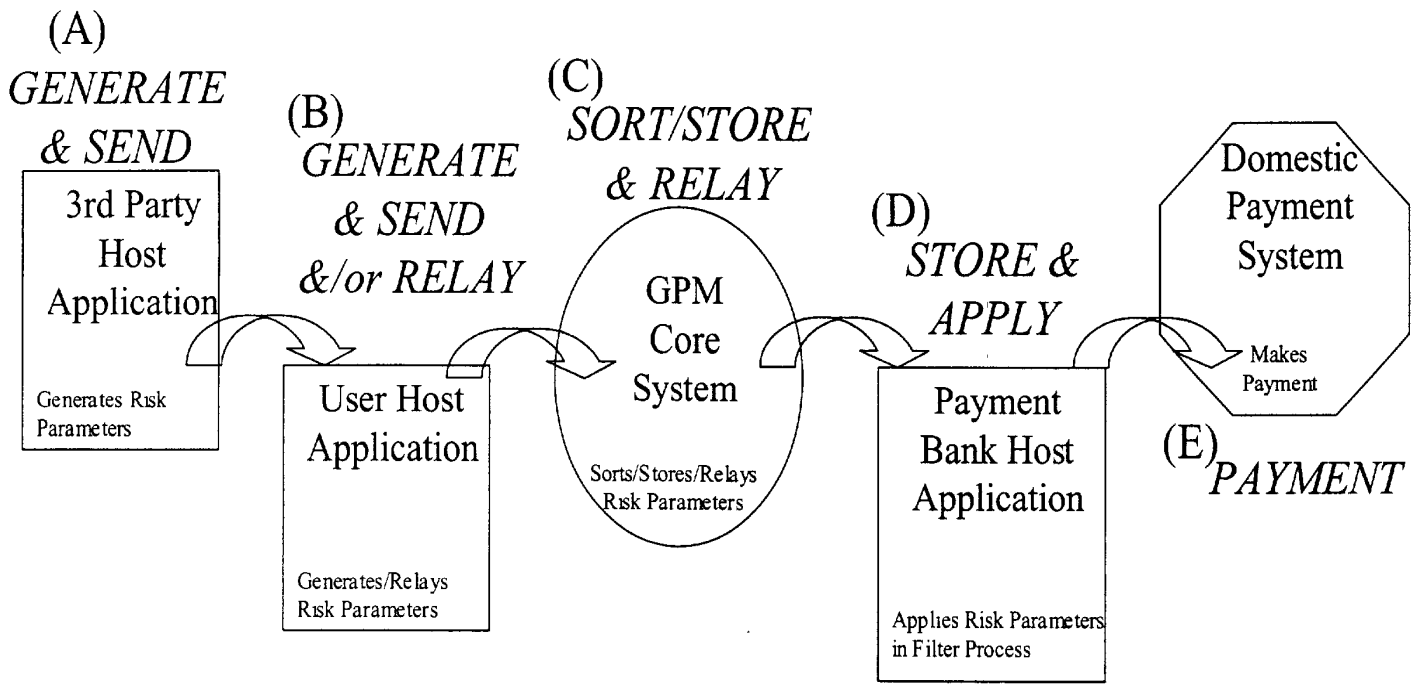
(A)
GENERATE & SEND
3rd Party Host Application
Generates Risk Parameters
(B)
GENERATE & SEND &/or RELAY
User Host Application
Generates/Relays Risk Parameters
(C)
SORT/STORE & RELAY
GPM Core System
Sorts/Stores/Relays Risk Parameters
(D)
STORE & APPLY
Payment Bank Host Application
Applies Risk Parameters in Filter Process
Domestic Payment System
Makes Payment
(E)
PAYMENT

FIG. 9A1

Risk Parameter Instruction Fields

Status	Tag	Field Name	Content/Options	No
M	52a	USER	4a2a2b[3b]	1
O	50	THIRD PARTY (Ordering Customer)	4a2a2b[3b]	2
M	53a	PAYMENT BANK (Sender's Correspondent)	4a2a2b[3b]	3
----->				
M	59	COUNTERPARTY (Beneficiary Customer)	4a2a2b[3b]	4

M	32A	CLEAN PAYMENT LIMIT [Value Date] Currency Code Amount	 [6n] 3a 15d	5
----->				
O	<XX>	PAYMENT TYPE	<2a3n[4a]>	6

USER
Definition: The Unique Identifier (UID) of the User institution initiating th instruction on behalf of itself or a Third Party.
Format: 4a2a2b[3b]

THIRD PARTY
Definition: The UID of the Third Party initiating the instruction to the User.
Format: 4a2a2b[3b]

PAYMENT BANK
Definition: The BIC code of the Payment Bank
Format: 4a2a2b[3b]

COUNTERPARTY
Definition: The UID of the Counterparty/Payee on outgoing payments instructions.
Format: 4a2a2b[3b]
Mulitple instances of this field are permitted.

CLEAN PAYMENT LIMIT
Definition: [Value date] (optional), currency code and amount of Clean Payment Limit.
Format:
[6n] date (YYMMDD)
3a currency code
15d amount

PAYMENT TYPE
Definition: Descriptor(s) of Payment Types for Filter Process
Format: 2a3n[4a] (e.g., MT200, MT202, etc., plus optional channel identification)
Where this optional field is left blank, the GPM Filter Process will apply to all payments made on behalf of a referenced User/3rd Party to a referenced Counterparty. Multiple instances of this field are permitted.

FIG. 9A2

Risk Parameters
COUNTERPARTY: A defined entity (or aggregation of entities) recognisable as Payee(s) or Payor(s) on a payment message through reference to industry standard identifiers used in payments messaging.
CLEAN PAYMENT LIMIT: Value threshold on payments from a User/3rd Party as "Payor" in respect of a designated Counterparty as "Payee". Acts as a debit cap on payments vis-à-vis a Counterparty.
PAYMENT TYPE: Given payment type descriptors (specified in payments message standards), allows selection of payment types for subjecting to the Filter Process.

FIG. 9B

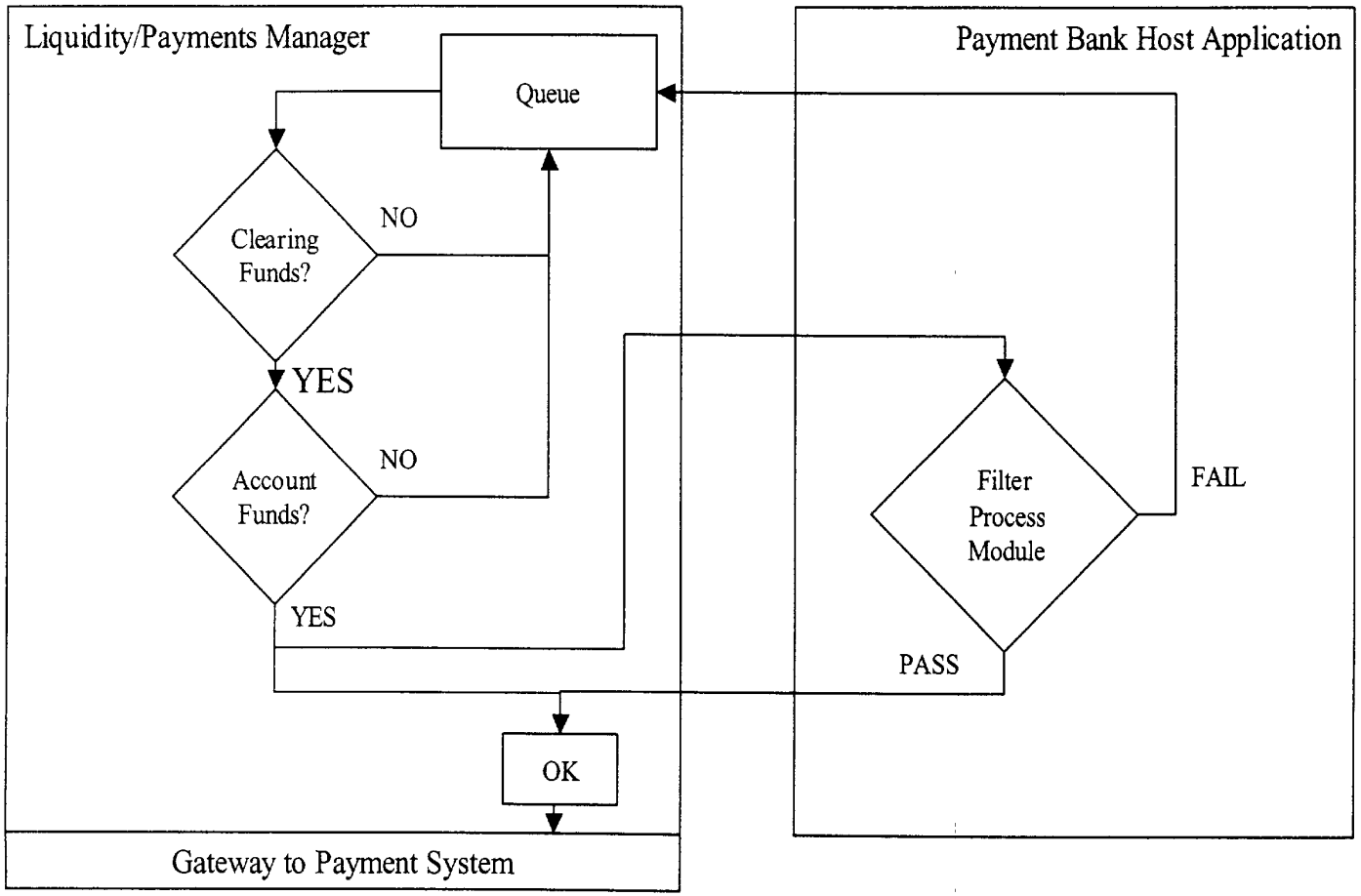
Liquidity/Payments Manager
Payment Bank Host Application
Queue
Clearing Funds?
NO
YES
Account Funds?
NO
YES
Filter Process Module
FAIL
PASS
OK
Gateway to Payment System

FIG. 9C

GPM Filter Process
Step A: Identify Payor
Step B: Assess whether Payor is GPM User/ 3rd Party If NO then PASS payment instruction; If YES then
Step C: Identify Payee and/or Intermediaries
Step D: Identify whether each Payee/ Intermediary is a GPM Counterparty of the User/ 3rd Party If NO then PASS payment instruction; If YES then
For each Counterparty
Step E1: Check whether Override instructions for Counterparty/Transaction Reference Number If YES then PASS payment + reduce Available Balance & store record of transaction; If NO then Step E2: Check whether Counterparty has been Suspended If YES then FAIL payment instruction + NOTIFY & store a temporary record of the transaction; If NO then
Step F: Identify Payment Type
Step G: Assess whether Payment Type is selected for GPM Filter Process If NO then PASS payment instruction; If YES then
Step H: Identify Payment Amount
Step I: Calculate Available Balance
Step J: Assess payment amount against Available Balance If payment amount is less than Available Balance then PASS payment instruction; If payment amount is more than Available Balance then FAIL payment instruction + NOTIFY & store a temporary record of the transaction;
Step K: Reduce Available Balance for Counterpartry by Payment Amount & store a temporary record of the transaction

FIG. 9D1

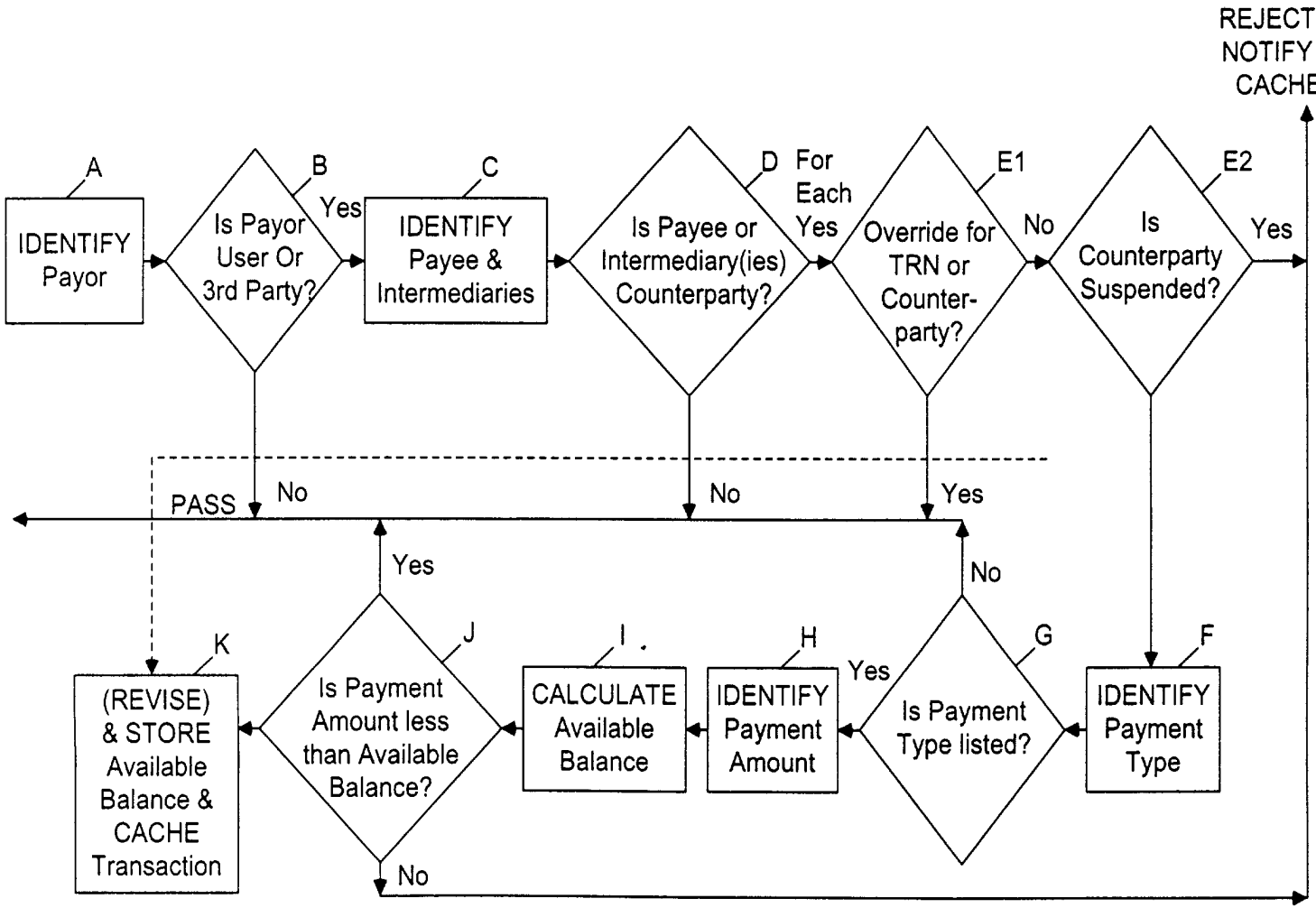
REJECT & NOTIFY & CACHE
A
IDENTIFY Payor
B
Is Payor User Or 3rd Party?
Yes
C
IDENTIFY Payee & Intermediaries
D
Is Payee or Intermediary(ies) Counterparty?
For Each Yes
E1
Override for TRN or Counter-party?
No
E2
Is Counterparty Suspended?
Yes
PASS
No
No
Yes
Yes
No
K
(REVISE) & STORE Available Balance & CACHE Transaction
J
Is Payment Amount less than Available Balance?
I
CALCULATE Available Balance
H
IDENTIFY Payment Amount
Yes
G
Is Payment Type listed?
F
IDENTIFY Payment Type
No

FIG. 9D2

Step I: Calculating Available Balance
Step I.1: Identify User/3rd Party
Step I.2: Identify Counterparty
Step I.3: Identify last stored Available Balance 3a: Available Balance will be Clean Payment Limit for initial processing 3b: Available Balance last stored by Process Filter 3c: Where Clean Payment Limit is amended intraday, the difference between the new CPL and the old CPL will be added to the stored Available Balance to either increase or decrease the Available Balance accordingly
Step I.4: Generate Inquiry to bank payment/account systems for incoming payments messages specifying Counterparty/ Payee as a "Payor" and specifying User/3rd Party as "Payee" since last timestamp
Step I.5: IF payments received, THEN total all payment amounts specified in all received payments
Step I.6: Add all received amounts to the last calculated Available Balance
Step I.7: Store & Forward (revised) Available Balance to Filter Process

FIG. 9E1

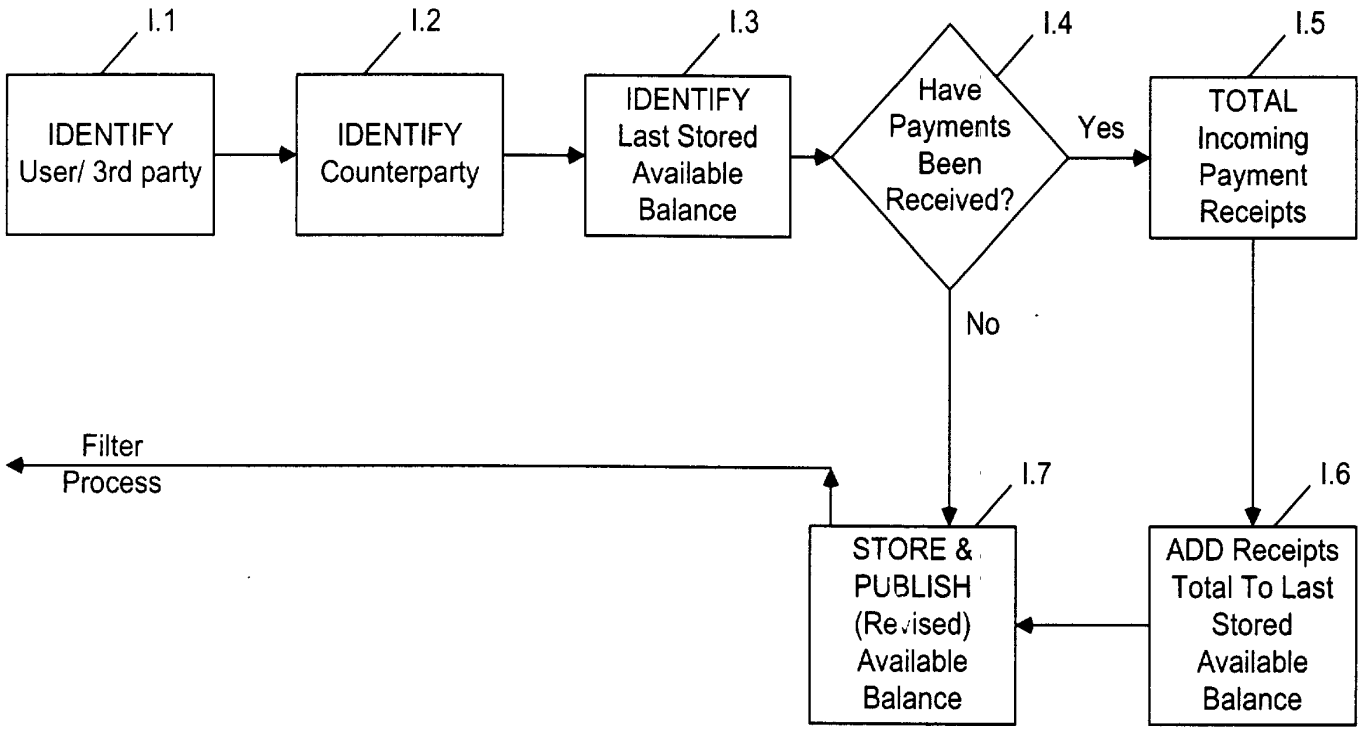
I.1
IDENTIFY User/ 3rd party
I.2
IDENTIFY Counterparty
I.3
IDENTIFY Last Stored Available Balance
I.4
Have Payments Been Received?
Yes
No
I.5
TOTAL Incoming Payment Receipts
I.6
ADD Receipts Total To Last Stored Available Balance
I.7
STORE & PUBLISH (Revised) Available Balance
Filter Process

FIG. 9E2

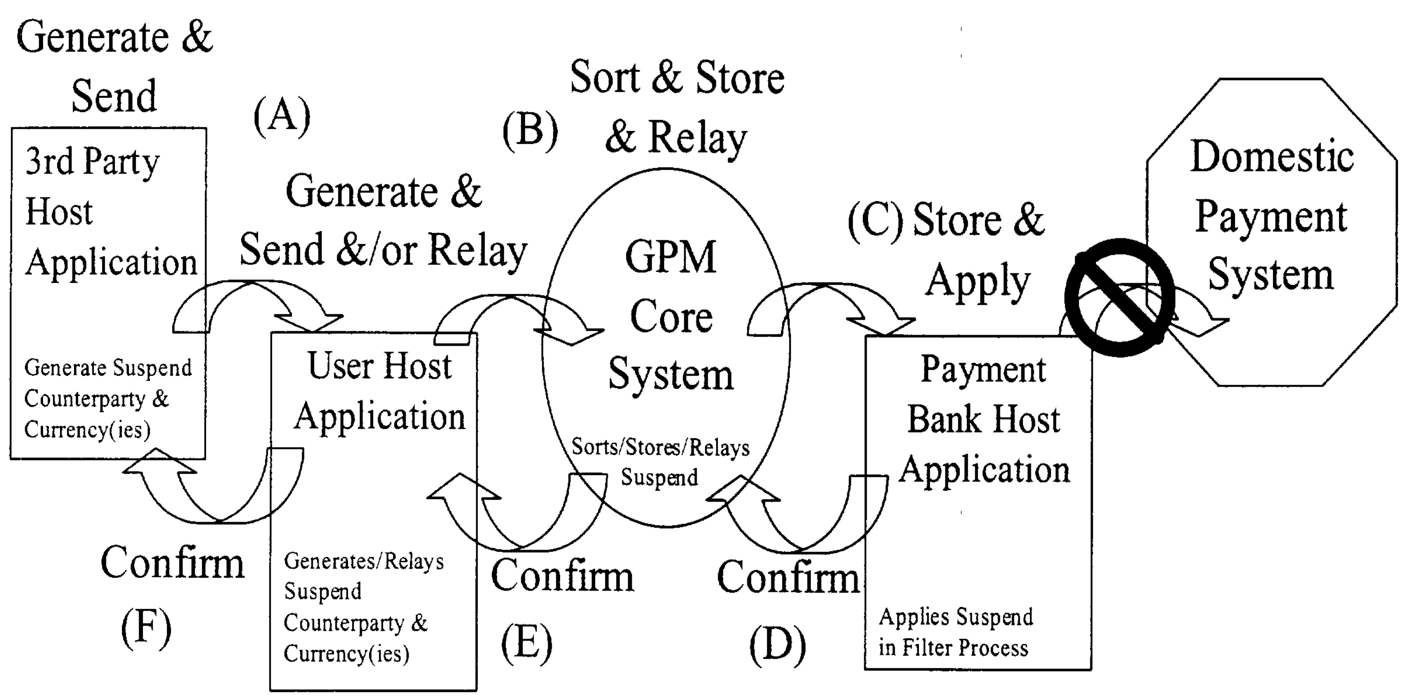
Generate &
Send
3rd Party
Host
Application
Generate Suspend
Counterparty &
Currency(ies)
(A)
Generate &
Send &/or Relay
User Host
Application
Generates/Relays
Suspend
Counterparty &
Currency(ies)
(B)
Sort & Store
& Relay
GPM
Core
System
Sorts/Stores/Relays
Suspend
(C) Store &
Apply
Payment
Bank Host
Application
Applies Suspend
in Filter Process
Domestic
Payment
System
Confirm
(F)
Confirm
(E)
Confirm
(D)

FIG. 9F1

Suspend Instruction Fields

Status	Tag	Field Name	Content/Options	No
M	52a	USER	4a2a2b[3b]	1
O	50	THIRD PARTY (Ordering Customer)	4a2a2b[3b]	2
M	53a	PAYMENT BANK (Sender's Correspondent)	4a2a2b[3b]	3
---->				
M	59	COUNTERPARTY (Beneficiary Customer)	4a2a2b[3b]	4
----|				
M	<XX>	SUSPEND INSTRUCTION	7a	5

FIELD 52A - USER
Definition: The Unique Identifier (UID) of the User institution initiating the instruction on behalf of itself or a Third Party.
Format: 4a2a2b[3b]

FIELD 50 - THIRD PARTY
Definition: The UID of the Third Party initiating the instruction to the User.
Format: 4a2a2b[3b]

FIELD 53a - PAYMENT BANK
Definition: The BIC code of the Payment Bank
Format: 4a2a2b[3b]

FIELD 59 - COUNTERPARTY
Definition: The UID of the Counterparty/Payee on outgoing payments instructions.
Format: 4a2a2b[3b]
The message structure allows for multiple Counterparties to be listed, as many Users and Third Parties will want to aggregate affiliated market trading entities as a single, "synthetic counterparty" for payments risk management purposes.

FIELD XX - SUSPEND INSTRUCTION
Definition: Suspends payments in Filter Process
Format: 7a (e.g., "suspend")

FIG. 9F2

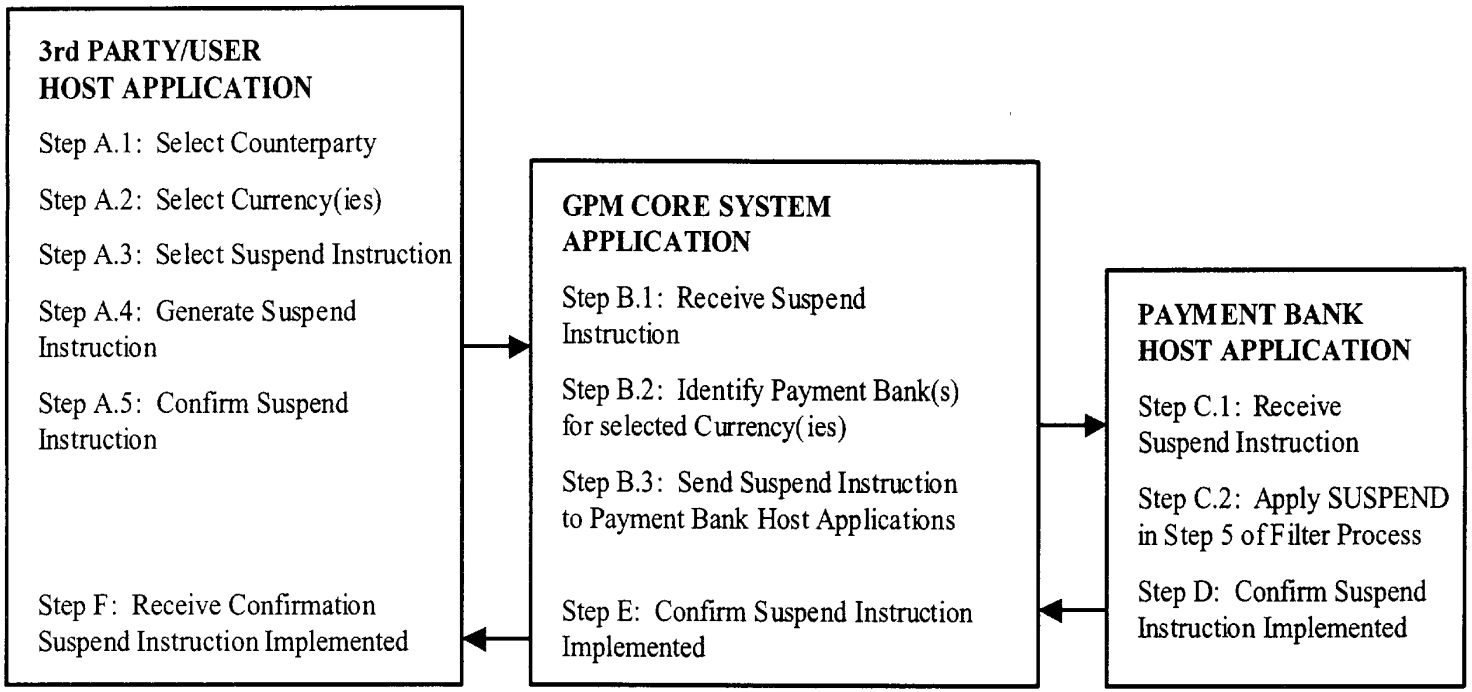
3rd PARTY/USER
HOST APPLICATION
Step A.1: Select Counterparty
Step A.2: Select Currency(ies)
Step A.3: Select Suspend Instruction
Step A.4: Generate Suspend Instruction
Step A.5: Confirm Suspend Instruction
Step F: Receive Confirmation Suspend Instruction Implemented
GPM CORE SYSTEM
APPLICATION
Step B.1: Receive Suspend Instruction
Step B.2: Identify Payment Bank(s) for selected Currency(ies)
Step B.3: Send Suspend Instruction to Payment Bank Host Applications
Step E: Confirm Suspend Instruction Implemented
PAYMENT BANK
HOST APPLICATION
Step C.1: Receive Suspend Instruction
Step C.2: Apply SUSPEND in Step 5 of Filter Process
Step D: Confirm Suspend Instruction Implemented

FIG. 9F3

GPM Risk Reduction
• Clear limits on Payment Risk and Liquidity Risk • Effective elimination of Systemic Risk • No disruption to existing payment mechanisms • Unilateral choice of Risk Parameters and GPM implementation with counterparty

FIG. 10A

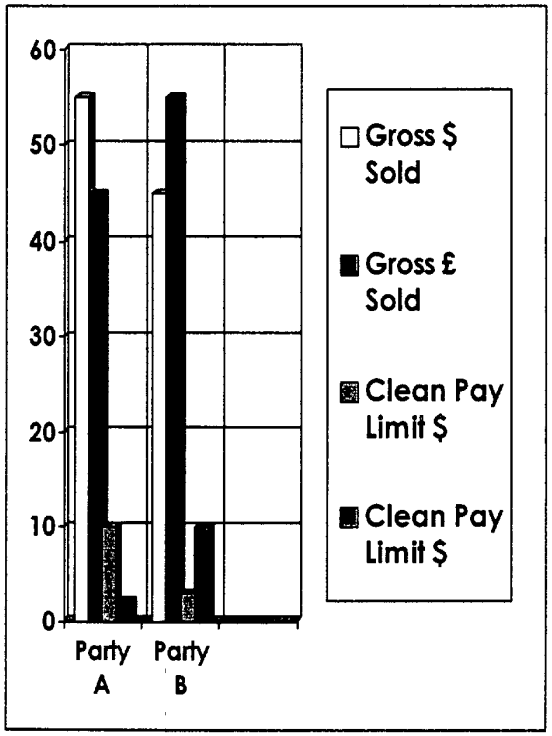

FIG. 10B